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How Useful Are Screening Tests?

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Recently, bioethicist Ezekiel Emanuel, MD, PhD, MSc, of the University of Pennsylvania, stirred up some controversy by suggesting in the *New York Times* that yearly checkups are a waste of time (http://nyti.ms/193cv6J). As part of his argument, he cited a Cochrane Collaboration systematic review that concluded that general health checkups do not reduce mortality. Given that these visits can cost billions of dollars a year, he argued that they were an unnecessary extravagance (http://bit.ly/1DRmyXw).

Many have countered in recent weeks, though, that mortality is a poor choice for outcomes in such an evaluation. After all, many good things can come out of checkups beyond a decrease in mortality. Helping patients avoid death is not the only thing physicians try to do when they see patients.

Moreover, the way our health care system is set up, yearly examinations are often where screening occurs. There are relatively few other opportunities to check healthy people for diseases or disorders that could affect them. Many of these screening opportunities are recommended by the United States Preventive Services Task Force (USPSFT).

Does Screening Save Lives?

But does screening healthy individuals save lives? A new study by John Ioannidis, MD, DSc, of Stanford University, and colleagues suggests the answer is no (http://bit.ly/15utVHU).

The researchers conducted literature searches to identify recommendations for screening tests that would be given to healthy nonpregnant adults. Of 50 diseases for which the USPSTF has published statements, they selected 19 diseases that had mortality as a common outcome, 12 of them involving cancer, 5 cardiovascular disease, 2 diabetes, and 1 for chronic obstructive pulmonary disease.

Those 19 diseases had a lot of research behind them. Forty-eight randomized trials were available, as well as 9 meta-analyses. In only 4 of the meta-analyses, however, did screening tests significantly affect disease-specific mortality. These included ultrasound screening for abdominal aortic aneurysm in men; mammography screening for breast cancer in women; and fecal occult blood testing and flexible sigmoidoscopy for colorectal cancer in men and women. Even some of these, however, did not affect all-cause mortality (http://bit.ly/1DycjrR).

So, more than half of the meta-analyses found no reduction even in disease-specific mortality as associated with screening. Moreover, the results from the many individual randomized trials are equally unsupportive. Only 30% of screening studies showed a significant effect on disease-specific mortality, and only 11% affected all-cause mortality.

This study was accompanied by 3 commentaries, each of which presented some important considerations and thoughts about what these results mean. First, it's important to realize that, as with checkups, mortality is not the only outcome that matters (http://bit.ly/1z25BEY). Trying to improve quality of life or reduce morbidity are also important outcomes. However, these outcomes are not usually stressed when it comes to screening. When we think of why women undergo mammography or why men have their prostate-specific antigen level checked, it's usually because they are afraid of diseases that can kill them.

There's also a lot of research about screening for the 19 diseases that the Ioannidis and colleagues did not consider, including data from epidemiological studies. But the evidence their review focused on is the most relevant, given that epidemiological studies can be confounded in many ways.

What's the Harm?

We have to remember that screening matters only if detecting a disease early makes a real difference in terms of outcomes, and if screening leads to a significant decrease in the detection of advanced disease (http://bit.ly/1M7oMq1). In practice, screening often doesn't lead to earlier diagnosis (http://1.usa.gov/193e7gK). Additionally, the later development of better treatments for later-stage disease can mitigate the advantages seen from screening in earlier studies (http://bit.ly/1CbQCvN).

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What screening often does, though, is cause some level of harm. Overdiagnosis and overtreatment can have detrimental consequences. Even the psychological worry from a false-positive result can have real-world implications.

These are screening tests recommended by the USPSTF, and the evidence for them is scant. Many other screening tests done by physicians don't even have this level of supportive evidence. Further, because of the Affordable Care Act, insurance must pay for all screening tests recommended by the USPSTF with a grade of A or B, regardless of whether they are cost-effective (http://nyti.ms/1zqkzUi).

In spite of this, many people, including many physicians, still maintain that screening tests and the annual checkups in which they occur have merit. There's a good chance that they're right. But at this time, the arguments being offered are not supported by robust evidence.

If other outcomes matter, then they should be put front and center. If what we are doing has merit outside of mortality prevention, an explicit case needs to be made for those gains. Otherwise, we are not only encouraging, but mandating, that our health care dollars be spent in a way that seems unjustifiable to many. ■

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